



Faculty of Resource Science and Technology

**Assessment of Food Handler's Compliance to Personal Hygiene Practices Regulation in Selected
Food Premises (P3 Categories) in Kuching, Sarawak.**

Nur Athirah Binti Bunsu

Supervisor: Dr Elexson Nillian

Resource Biotechnology

Faculty of Resource Science and Technology
Universiti Malaysia Sarawak
(15/06/2022)

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Nur Athirah Binti Bunsu (70892)

Name of the student (Matric No.)

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Current Address:

Lot 647, Menuan Land District, Jalan Bletch, 96800 Kapit, Sarawak.

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List of Abbreviations

WHO	World Health Organisation
MOH	Ministry of Health
F&B	Food and beverages
SOP	Standard Operating Procedure
BCR	Big chain restaurant

Acknowledgement

Before anything else, I would like to thank Allah S.W.T for helping me to ease my final year project works, giving me a mental strength as well as a great perseverance throughout the completion of this project despite all of the obstacles and challenges.

The deepest gratitude to my supervisor and co-supervisor, Dr. Elexson Nillian and Dr. Azra Tilai for the knowledge, support, guidance, and assistance for the completion of my final year project and research work. Not forgetting my teammates, friends, family, programme coordinator and examiner who have helped me in anyways.

I would like to extend my sincere gratitude to those who lend a helping hand and cooperate with me until the end of my research and writing work directly or indirectly.

ABSTRACT

Foodborne illness usually caused by the exposure or contamination of microbes. Personal hygiene of food handler throughout the serving process plays an important role in ensuring consumers are not exposed to microbes that cause foodborne illness. This study implemented with a population size of 300 food handlers around Kuching, Sarawak. It aims to assess food handler's compliance to personal hygiene practices regulation, data and information gathering as well as intended to statistically determine the level of hygienic practices among food handlers. General methodology used was descriptive cross-sectional study where compliance survey and observation checklist are needed to be fill in so that data can be collected, observe, and analyze. Throughout the research and assessment session, results and findings obtained indicates that food handlers around Kuching, Sarawak have a good level of hygiene, attitudes, and execution during handling food. Evidently, there are high mean percentage of assessment on food handler attire (90.71%), personal hygiene practices (97.86%), personal unhygienic behaviour (92.17%) as well as compliance on standard operating procedure (99.80%) which contributed to overall mean percentage of 95.14%. The higher the mean percentage shows a higher hygiene practice among food handlers. The impact of a good hygiene practices could help in reducing issues related to foodborne illness caused by non-compliance with personal hygiene.

Key words: Foodborne, compliance, personal hygiene, food handlers.

ABSTRAK

Penyakit bawaan makanan berlaku disebabkan oleh pendedahan atau pencemaran mikrob. Kebersihan diri pengendali makanan sepanjang proses penyajian memainkan peranan penting dalam memastikan pengguna tidak terdedah kepada mikrob yang menyebabkan penyakit. Kajian ini dilaksanakan dengan saiz populasi 300 pengendali makanan di sekitar Kuching, Sarawak. Ia bertujuan untuk menilai pematuhan pengendali makanan terhadap peraturan amalan kebersihan diri, pengumpulan data dan maklumat serta bertujuan untuk menentukan secara statistik tahap amalan kebersihan dalam kalangan pengendali makanan. Metodologi umum yang digunakan ialah kajian keratan rentas deskriptif di mana tinjauan kepatuhan dan senarai semak pemerhatian perlu diisi supaya data dapat dikumpul, diperhatikan dan dianalisis. Sepanjang sesi penyelidikan dan penilaian, hasil yang diperolehi menunjukkan bahawa pengendali makanan di sekitar Kuching, Sarawak mempunyai tahap kebersihan, sikap dan pelaksanaan yang baik semasa bekerja. Jelas sekali, terdapat purata peratusan penilaian yang tinggi terhadap pakaian pengendali makanan (90.71%), amalan kebersihan diri (97.86%), tingkah laku tidak bersih diri (92.17%) serta pematuhan prosedur operasi standard (99.80%) yang menyumbang kepada min keseluruhan sebanyak 95.14%. Semakin tinggi peratusan min menunjukkan amalan kebersihan yang lebih tinggi dalam kalangan pengendali makanan. Kesan amalan kebersihan yang baik boleh membantu dalam mengurangkan isu berkaitan penyakit bawaan makanan yang disebabkan oleh ketidakpatuhan terhadap kebersihan diri.

Kata kunci: Bawaan makanan, pematuhan, kebersihan diri, pengendali makanan

1.0 Introduction

1.1 Background

Food safety is defined by the World Health Organization (WHO) as the conditions and measures required during food production, processing, distribution, storage, and preparation to ensure that the food is safe, sound, healthful, and acceptable for human consumption (WHO, 1984). Food safety is a controversial subject and debating point among professionals in the community that includes the food producer and the food consumer. Food contamination that will cause foodborne illness might occur in the time of preparation process and the possibility of contamination is depending on the compliance to personal hygiene practices of food handlers (Todd et al., 2007).

Food handlers specifically food handlers for P3 category which is food outlet, there are law and regulation from Ministry of Health (MOH) and the city council that must be complied, and routine assessment or inspection would be implemented by the authority to ensure that food premises owners together with food handlers obey the law and regulation provided. Regarding this matter, Food Hygiene Regulations 2009 under Food Act 1983 is commonly being used and any regulations in the act that was not complied by the food handlers or food premises owners, the individual is liable to punishment and compound.

Food and beverages (F&B) industry is an industry that gets a positive response from the community because food is a basic need that feeds the needs in modern lifestyle. So, F&B industry is growing rapidly due to high demand and job opportunities. Food safety in the F&B industry is one of the main factors to ensure that consumers consume food that is safe to consume, convenient and nutritious. Unfortunately, Malaysia's foodborne illness cases have crucially increased from 2005 until 2013 which also involved a number of mortality cases

(A'aishah, 2014). Main factors that contributing to foodborne illness were raw materials that are contaminated, cross contamination in food preparation period, food preparation that are too early, food serving time that are more than four hours of mealtime, unmonitored processing temperature changes, sale, storage, and transportation of food (Wahida et al., 2017).

Therefore, the aim of this research project is to assess food handler's compliance to personal hygiene practices regulation, investigate data and information on food handler's compliance to personal hygiene practices regulation and determine the level of hygienic practices among food handlers by analysing the data obtained.

2.0 Literature Review

2.1 Food handler's personal hygiene

In consonance with Holland (2018), personal hygiene is defined as in the manner of a body care where it includes the routine of bathing, washing your hands, brushing your teeth, and more. The self-cleanliness practices could have help in fighting germs and diseases from the surroundings. Undeniably, personal hygiene can stimulate personal confidence in the way that it makes an individual feel good by looking clean and have neat appearance. Toilet hygiene, shower hygiene, nail hygiene, dental hygiene, illness hygiene, and hand hygiene are the six categories of personal hygiene (Holland, 2018). All these aspects in personal hygiene should be continuously practice by an individual especially among food handlers.

2.2 Personal hygiene practices regulation

2.2.1 Protective clothing

In the health regulations, wearing suitable protective clothing for a food handler is mandatory where the cloth should be in a clean and neat condition prior as well as at all times of food preparation process, clothing material and design should not cause contamination, and a clothing design that would not cause direct contact with any part of the food (Murwira et al., 2016). Apron usage is encouraged at all times of the food preparation period. During Covid-19 pandemic season, it is compulsory for the food handlers and workers in food premises to wear a face mask without wearing the same face mask multiple times in ensuring that infectious rates can be reduced.

2.2.2 Hair hygiene

Finding a hair in food is one of the reasons for the unpleasantness towards the food premise or the food handler. Falling hair, dandruffs, or even foreign matter from head into the

food is considered as contamination. Thus, it can lead to foodborne disease due to pathogenic organism from hair and the scalp for example like *Staphylococcus aureus*. The head of a food handler should be kept in a clean condition and covered with proper head cover during handling food. There are quite several Muslim hijabi food handler in Kuching, Sarawak, hence head cover is not compulsory to be wear.

2.2.3 Hands hygiene

Hands is the instrument that get a lot of involvements in food handling procedure hence, hands are frequently related to pathogens transfer in food industry and that is why touching food or kitchenware during food handling had better to be minimized (Murwira et al., 2016). That is why gloves are preferably to be used instead of bare hands during food handling and gloves cannot be used with the same type of food during food preparation to reduce cross contamination for example, gloves used to handle meat cannot be used during fruit preparation for dessert. Moreover, the food handler's hands should be in clean condition for instance, having a short and clean fingernail without nail polish, not hairy, has no open wounds or skin diseases. Washing hands practices are compulsory immediately before the beginning of each work shift, before starting the work and after break time, after every visit to the toilet for urination and defecation, every single time after the food handler's hand contacted with any perspiration, air droplets from sneezing and after handling raw materials (Murwira et al., 2016). Hands should be wash properly using antibacterial soap and the washing basin should be prepared at the suitable place without contaminating food at the nearby food preparation area.

2.2.4 Ethics in workplace

In accord with Oxford Learner's Dictionary (n.d.), ethics is defined as a set of rules of conduct or moral principles that control or influence a person's behaviour. Ethics during work

or in the workplace is clarify as the standards that leads the behaviour of employees as regards to conscience in conducting and deciding things (Mahan, 2019). Ethics are essential especially at workplace. A contrary explanation is that ethical behaviour could encourage a positive working vibe, leads to a development of individual values, stimulating a teamwork spirit thus leading to organizational growth.

2.3 Food handler

2.3.1 Requirements and qualification

A food handler is someone who works or is involved in the food industry and either directly or indirectly handles food or surfaces that are likely to come into touch with food, such as cutlery, plates, and bowls (Food Standard Australia New Zealand, n.d.). It includes a person that are involves in food making, cooking, preparation of food, food serving, packaging process, displaying and food storing. According to Food Standard Australia New Zealand (n.d.) “food handlers can also be involved in manufacturing, producing, collecting, extracting, processing, transporting, delivering, thawing or preserving food.” Anyone could be involved or eligible to be a food handler if there are directly or indirectly related to stated processes.

Compulsorily, food handlers need to be engaged in Food Handlers Training to comply with the rule and regulation of MOH or local district (EQ Quality Training PLT, n.d.). This Food Handlers Training course is provided by Food Handlers Training School that are recommended by and acknowledge by MOH. Participation in this course is included in Food Hygiene Regulations 2009 under Food Act 1983, thus any person disobeys the regulation could be compounded and may possibly be imprisoned. Any food handler from restaurant, food outlets, cafeteria, food manufacturer or even food handler in hotels or resorts should attend this course. This course usually focusing on food poisoning, contamination, hygiene of an

individual, housekeeping and sanitation, law, and work ethics, as well as food safety system. Moreover, food handler are compulsory to take the typhoid injection and it should be taken once in every three years throughout their carrier in F&B industry (Zai, 2021).

2.3.2 Food handler's compliance

In consonance with Oxford Learner's Dictionary (n.d.), compliance is defined as the practice of act in accordance with rules or requests made by the authority. In this research study, food handlers need to fulfil the obligation of the Food Act 1983 specifically the Food Hygiene Regulations 2009. Any individual who fails to comply with Regulation 3 of the Food Hygiene Regulation 2009 commits an offence and is subject to a fine of up to RM10,000 or a sentence of imprisonment of up to 2 years if convicted (Leong, 2018).

2.4 Food premises

2.4.1 Food premises in Kuching, Sarawak

According to Cambridge dictionary (n.d.), premise is defined as the land or buildings owned by someone, especially by a company or organization. In this case, food premises or outlet is a building, or area that are owned by someone to carry on the food and beverages business. Legally, food premises is not owned by someone as if it is a property that could be passed down from generation to generation or as inheritance, the outlet was only lent by the district council to food premises owners for business. The food premises owner needs to apply a license for the food outlet to be legally selling foods. According to Malay Mail (2021) there are approximately 1,500 food premises around Kuching, and it is expected to increase in number due to infrastructure development in Kuching.

2.4.2 P3 category of food premises

All food premises in Malaysia must be registered with the MOH as required under Regulation 3, Food Hygiene Regulations 2009. In accordance with Malcom Solutions (2020), there are four classification categories of food premises which are P1 category for food factory, P2 category for food catering services, P3 category for food outlet such as stalls, canteen, restaurant and more as well as P4 category which is vehicle used to sell ready-to-eat food such as food trucks. This research study only focusing on the P3 category of food premises.

2.4.3 Assessment of food premises

The assessment of food premises usually carried out by the MOH in a routine basis all over the country aside from organizing scheduled” Operasi Premis Makanan Bersih” twice a month. In 2018, there is a total of 2,302 which equal to 1.8% of food premises instructed for closure under Section 11, Food Act 1983 from a total of 126,896 food premises that were inspected (Food Safety and Quality Division, 2018). According to Food Safety and Quality Division, (2018), a total of 12,183 charges were issued to food premises workers and food handlers who failed to comply with the Food Act 1983 specifically Food Hygiene Regulations 2009.

2.4.4 Grading of food premises

Legally, food premises grading was only allowed to be implemented by authorized person or organization. In Kuching, Sarawak specifically in Council of the city of Kuching South jurisdiction, food safety and quality control unit was given the responsibility and authority for food premises grading by the council. The food premises grading form will be filled by the person in charge. The form can be referred in appendices page 31 contained

elements and regulations that must be complied by food premises owner and workers in accordance with Food Hygiene Regulation 2009. The form contained few sections that includes inspection of food and drinks preparation area, toilet facilities and cleanliness, serving area, personal hygiene and others licensing as well as health requirement. Food premises will be graded with grade A with marks obtained ranging from 85% to 100%, grade B with marks obtained ranging from 70% to 84%, grade C with marks obtained ranging from 60% to 69% and a score lower than grade C may result in the suspension of business license.

2.5 Cross-sectional descriptive study

According to Nedarc (2019), a descriptive cross-sectional study is one in which the conditions and any associated factors for a specific targeted population are computed at a certain point in time. This method of study allowed frequency and characteristics of a condition in a population to be seen clearly. Subsequently, this type of data can be used to assess the pervasiveness of the targeted population.

3.0 Methodology

3.1 Compliance of assessment

Declining number of Covid-19 infections in Malaysia followed by the improvement in SOP compliance by the community leads to the approval from the government to allow the operation and business of food premises. Due to this flexibility, face-to-face assessment towards food handlers were allowed. Questions in the observation checklist and compliance survey were obtained from the previous research study but it was adapted, and slightly modified (Murwira et al., 2016). The observation checklist together with the compliance survey act in accordance with MOH food safety and hygiene guidelines elements emphasized in Food Hygiene Regulation 2009. The hardcopies of the observation checklist for assessment as well as compliance survey were printed out and distributed to food handlers during assessment session.

3.2 Study area

Study area of this research is focusing on food outlets in Kuching, Sarawak. A cross-sectional descriptive study is the method used to quantify this study and observation checklist for compliance of food handler's assessment according to the Food Hygiene Regulation 2009 was provided. The method of random sampling was implemented and a total of 300 food handlers were involved in this study from November 2021 until February 2022.

3.3 Data collection and data quality assurance

All data related to demographic information were assembled through questionnaires and at the same time, assessment of food handler's compliance was evaluated using an observation checklist. All food handler and workers of the food premises had to participate in

the assessment nevertheless they were in charge with food preparation process or not. The questionnaire on the 'Assessment and Evaluation of Food Handlers Compliance' contained only 29 items which divided into five sections which are socio demographic characteristic questionnaire, assessment on food handler's attire, personal hygiene practices among food handlers and personal unhygienic behaviour of food handler as well as the standard operating procedure (SOP) for food premises during Covid-19 outbreak. The questionnaires were filled out by the food premises workers, followed by implementation of face-to-face interview and direct observation for the other section of the assessment.

3.4 Ethical consideration

Consent form for this study were obtained from Faculty of Resource Science and Technology (FRST) of University Malaysia Sarawak (UNIMAS). Throughout the research, confidentiality and anonymity of respondents were guaranteed (Woh et al., 2016).

3.5 Data recording and tabulation

Data were recorded and tabulated directly after each assessment session. Microsoft Excel was used to gather all the data obtained from November 2021 until February 2022. These recording and tabulation made the data to be easier to access and understand.

3.6 Statistical analysis

Descriptive statistics was used in this research project to present an outline and review of the raw data as well as helping in characteristic elucidation of the sample obtained. The computational of frequencies, percentages, means, and standard deviations were accomplished on demographic variables for this intent. Data collected are handled and analyzed by using

SPSS version 21.0 and Microsoft Excel. According to Saad et al. (2013), SPSS tools were used for descriptive data, factor, and reliability analyses for this study. In this study, to ascertain the level of hygienic practices among food handlers, the mean percentage scores were made use of (Woh et al., 2016).

4.0 Results

A compliance survey form and observation checklist had a total of 300 respondents which consist of 168 (56.00%) females and 132 (44.00%) males. Most of the respondent were from the age range of 19-25 years old that are consist of 175 respondents (59.00%), followed by individual from the age range of 26-35 years old with 85 respondents (28.00%), 36 years old and above with 21 respondents (7.00%) as well as 18 years old and below with 19 respondents (6.00%) from the total of 300 respondents. Table 1 shows the socio demographic characteristics of food handlers.

Table 1. Socio demographic characteristic questionnaire.

Demographic variables	Categories	(n)	(%)
Age	18 and below	19	6.00
	19 - 25	175	59.00
	26 - 35	85	28.00
	36 and above	21	7.00
Gender	Male	132	44.00
	Female	168	56.00
Level of education	Primary	10	3.33
	Secondary	169	56.33
	Tertiary	121	40.33
Food safety training	Yes	262	87.33
	No	38	12.67
Anti-typhoid vaccine	Yes	245	81.67
	No	55	18.33

Note. Based on Table 1, (n) represent frequencies, whereas (%) represent its percentage.

Accordingly, 56.00% of 300 respondent are from secondary level of education followed by 40.33% from the tertiary level of education and only 3.33% of them are from primary level of education. Meanwhile, for the involvement in food handling courses, 262 (87.33%) of the

responded had attended the course while the other 38 (12.67%) respondent has not participated in food handling courses. For anti-typhoid vaccine, 81.67% of the respondent have received the vaccine while the other 18.33% has not received the vaccine.

For the assessment on food handler’s attire, 272 respondents (90.67%) wears clean apron and 295 respondents (98.33%) keep the apron in cupboard or locker after used. 285 respondents (95.00%) wears hat or head covers, 296 respondents (98.67%) wears face mask, all of the respondents wear clean cloth while preparing food, 295 respondents (98.33%) wears covered shoes, only 201 respondents (67.00%) wears gloves while handling food and 233 respondents (77.66%) does not wear any accessories or jewelleryes on hands and wrists. Table 2 shows the assessment on food handler’s attire.

Table 2. Assessment on food handler’s attire.

Variables	Conformity		Non-conformity	
	(n)	(%)	(n)	(%)
Wears Clean Apron	272	90.67	28	9.33
Keep apron in cupboard or locker after used	295	98.33	5	1.67
Wears hat or head covers	285	95.00	15	5.00
Wears face mask	296	98.67	4	1.33
Wears clean cloth	300	100.00	0	0
Wears covered shoes	295	98.33	5	1.67
Wears gloves while handling food	201	67.00	99	33.00
Not wearing accessories or jewelleryes on hands and wrists	233	77.66	67	22.34

Note. Based on Table 2 (n) represent frequencies while (%) showed its percentage.

For the personal hygiene practices among the food handlers, 270 respondents (90.00%) have short and clean fingernails, all of them wash their hands with soap, 298 respondents (99.30%) have no open wounds or sores, as well as all of them does not use nail polish and have no skin disease or infection such as eczema. Table 3 shows the personal hygiene practices among food handlers.

Table 3. Personal hygiene practices among food handlers.

Variables	Conformity		Non-conformity	
	(n)	(%)	(n)	(%)
Fingernails cut short and clean	270	90.00	30	10.00
Wash hands with soap	300	100.00	0	0
No open wounds or sores	298	99.30	2	0.70
Not using nail polish	300	100.00	0	0
No skin disease or infection	300	100.00	0	0

Note. Based on Table 3 (n) represent frequencies while (%) showed its percentage.

Subsequently, for personal unhygienic behaviour of the food handlers, as observed none of the food handler shake hands while preparing food, 287 respondents (95.67%) were not chewing while handling food, 228 respondents (76.00%) were not changing money during food preparation, as observed, none of them cough while handling food, less than 1% of the respondents scratching while preparing food and 245 respondents (81.67%) were not touching food with bare hands. Table 4 shows the personal unhygienic behaviour of food handlers.

Table 4. Personal unhygienic behaviour.

Variables	Conformity		Non-conformity	
	(n)	(%)	(n)	(%)
Not shaking hand while preparing food	300	100.00	0	0
Not chewing while preparing food	287	95.67	13	4.33
Not changing money while preparing food	228	76.00	72	24.00
Not coughing while preparing food	300	100.00	0	0
Not scratching during preparing food	299	99.67	1	0.33
Not touching food with bare hand	245	81.67	55	18.33

Note. Based on Table 4 (n) represent frequencies while (%) showed its percentage.

For the compliance of Covid-19 SOP, all the food premises has provided hand sanitizer, thermometer to take customer's body temperature and 'MySejahtera' QR code and registration book. There were only less than 1% of the food premises does not check customer' vaccine certification and control the number of customers in the premises. Table 5 shows the standard operating procedures complied by food premises.

Table 5. Standard operating procedures.

Item	Conformity		Non-conformity	
	(n)	(%)	(n)	(%)
Provide hand sanitizer	300	100.00	0	0
Taking customer's body temperature	300	100.00	0	0
Prepare 'MySejahtera' QR code and registration book	300	100.00	0	0